

ABSTRACT

Heat sinks, heat pipes, and other thermal management devices are formed of a conductive loaded resin-based material. The conductive loaded resin-based material comprises micron conductive powder(s), conductive fiber(s), or a combination of conductive powder and conductive fibers in a base resin host. The ratio of the weight of the conductive powder(s), conductive fiber(s), or a combination of conductive powder and conductive fibers to the weight of the base resin host is between about 0.20 and 0.40. The micron conductive powders are formed from non-metals, such as carbon, graphite, that may also be metallic plated, or the like, or from metals such as stainless steel, nickel, copper, silver, that may also be metallic plated, or the like, or from a combination of non-metal, plated, or in combination with, metal powders. The micron conductor fibers preferably are of nickel plated carbon fiber, stainless steel fiber, copper fiber, silver fiber, or the like. The conductive loaded resin-based heat sink, heat pipe, or other thermal management devices can be formed using methods such as injection molding compression molding or extrusion. The conductive loaded resin-based material used to form the heat sinks can also be in the form of a thin flexible woven fabric that can readily be cut to the desired shape.